

Research Note 85-39

AD-A160 367

EXTENSION OF TRAINING EXTENSION COURSE COST AND TRAINING
EFFECTIVENESS ANALYSIS DATA COLLECTION

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U. S. Army

Research Institute for the Behavioral and Social Sciences

FEBRUARY 1985

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AD-A160 367

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER ARI Research Note 85-39	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) EXTENSION OF TRAINING EXTENSION COURSE RESEARCH COST AND TRAINING EFFECTIVENESS ANALYSIS DATA COLLECTION		5. TYPE OF REPORT & PERIOD COVERED
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) J. Bercos and R.C. Eakins		8. CONTRACT OR GRANT NUMBER(s) DAHC-19-77-C-0011
9. PERFORMING ORGANIZATION NAME AND ADDRESS Mellonics Systems Development Division Litton Systems P.O. Box 2498, Fort Benning, Georgia 31905		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 26Q162722A777
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Army Research Institute Fort Benning Field Unit, P.O. Box 2086 Fort Benning, Georgia 31905-0686		12. REPORT DATE February 1985
		13. NUMBER OF PAGES 26
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) U.S. Army Research Institute for the Behavioral and Social Sciences, 5001 Eisenhower Avenue, Alexandria, Virginia 22333-5600		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES H.C. Strasel, Contracting Officer's Representative		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) TEC Data Collection Methodology Cost and Training Effectiveness Analysis (CTEA) ARTEP Unit Training		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report presents forms and instructions for the collection of unit training data. The data collection method is designed to be used during an eight-week period preceding the Army Training and Evaluation Program (ARTEP) evaluation. Resulting data may be used to evaluate training effectiveness of TEC and other training methodology.		

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FOREWORD

This task report is one of several provided by the Mellonics Systems Development Division of Litton Systems, Inc., to the Army Research Institute for the Behavioral and Social Sciences (ARI) under Contract Number DAHC 19-77-C-0011.

Under the contract, a part of the Mellonics effort concerns support to the ~~ARI~~ evaluation of the utilization, acceptance, cost, and effectiveness of the Army Training Extension Course (TEC) Program. Related earlier reports focused on the cost and training effectiveness of TEC where effectiveness was a function of individual performance on selected hands-on performance tests, and the relation of TEC usage to individuals performances on the SQT. Results showed TEC effective in training individuals and a positive relationship between TEC usage and SQT scores.

This current report is the second in a series of reports. The initial report in this series documents the conduct and findings of a training, cost and effectiveness literature search and review of selected literature. It serves as the introduction to the third report which concerns the development of a TEC Cost and Training Effectiveness (CTEA) methodology, where effectiveness is a function of unit performance as measured by the Army Training and Evaluation Program (ARTEP) evaluation. This current report provides the forms and instructions necessary for the collection of training data from field units. This training data constitutes the inputs to the methodology effectiveness production function.

See #1473

¹Sassone, P.G. Literature Review - Cost and Training Effectiveness.
Litton-Mellonics, Training Extension Course Research Task Report: July 1978.

²Sassone, P.G. and Bercos, J. Training Extension Course Cost and Training Effectiveness Analysis Methodology.

EXTENSION OF TRAINING EXTENSION COURSE COST AND TRAINING EFFECTIVENESS ANALYSIS DATA COLLECTION

EXECUTIVE SUMMARY

Requirement:

To develop forms and implementation instructions for the collection of unit training data which are required input to the Training Extension Course (TEC) Cost and Training Effective Analysis (CTEA) Methodology.³

Procedure:

The completed forms were validated as follows:

- o Three different battalions at Fort Benning, Georgia (infantry, armor, and artillery), reviewed the forms and recommended changes that would improve the utility of the forms for their respective units.
- o The revised forms were reviewed by an artillery battalion at Fort Stewart, Georgia, in preparation for the collection of actual training data.
- o The completed forms were used for the development of hypothetical unit training data.

Findings:

The forms appear to provide an efficient procedure for the collection of required data; however, a full evaluation of the forms must be subsequent to the collection of an experimentation with actual data.

Utilization:

The forms contained in this report are designed to be utilized for the collection of individual and unit training data during an eight-week period preceeding the Army Training and Evaluation Program (ARTEP) external evaluation. The collected data constitutes the input requirements to the TEC CTEA Methodology.

³Sassone, P.G. and Bercoes, J. TEC CTEA Methodology

EXTENSION OF TRAINING EXTENSION COURSE COST AND TRAINING EFFECTIVENESS ANALYSIS DATA COLLECTION

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EXTENSION OF TRAINING EXTENSION COURSE COST AND TRAINING EFFECTIVENESS ANALYSIS DATA COLLECTION

INTRODUCTION

Litton-Mellonics, under contract to the Army Research Institute (ARI), has been involved in the conduct of Training Extension Course (TEC) Cost and Training Effectiveness Analysis (CTEA) research. Previous efforts focused on the cost and training effectiveness of TEC, where effectiveness was a function of individual performances on selected hands-on performance tests, and the relation of TEC usage to individual performances on their Skill Qualification Test (SQT). Performance, SQT, TEC usage, training, and personnel data were obtained from more than fifty (50) Active Army battalions. Results showed TEC effective in training individuals and a positive relation between TEC usage and SQT scores.

This current research effort also concerns the cost and training effectiveness of TEC, but where effectiveness is a function of unit performances (squads/sections/crews) on selected portions of their Army Training and Evaluation Program (ARTEP) evaluations.

The current report is the second in a series of reports on TEC CTEA in unit context. The initial document⁴ of this series reported on a review and evaluation of literature relevant to a TEC CTEA and serves as an introduction to subsequent reports. Because of TEC's unique complementary role, it does not fit the usual training program mold; therefore, analytical techniques available in current literature are not completely suitable for a TEC evaluation. Accordingly, the third report⁵ develops a TEC-specific evaluation methodology which is a new approach to training evaluation. The model guides the choice among various types of training and assesses the value of TEC. The methodology can be used to provide an objective economic evaluation of the contributions TEC training makes to unit performance.

The ARTEP external evaluation is the best available measure of unit performance. The ARTEP ratings are converted to a numerical measure of effectiveness and this constitutes the output of the effectiveness production function. The inputs to the function are obtained through the collection of individual personnel data (all personnel assigned to the unit undergoing evaluation) and the collection of detailed data which reflects all individual and collective training activities of the unit.

⁴Sassone, Literature Review - Cost and Training Effectiveness.

⁵Sassone & Bercos, TEC CTEA Methodology

The primary purposes of the Task covered by this current report were to identify the data to be collected, develop the necessary forms, plan the collection effort, and collect data from several units undergoing ARTEP preparatory training. However, during this period, units were not available for the collection of actual data. This report contains the forms and instructions which were developed for the data collection effort.

RESULTS

The data collection effort was designed to start eight weeks prior to the ARTEP evaluation. A briefing to unit supervisory personnel was to be conducted at least four weeks prior to the start of the collection effort. The letter at Appendix 1 (to be delivered at the initial briefing of unit personnel) was designed to provide information for supervisors and the point-of-contact in each unit.

The form at Appendix 2, Section/Squad/Crew Training Data, was designed to collect all squad echelon training that each individual receives.

The form at Appendix 3, Company/Battery/Training Data, was designed to collect data on all training above squad echelon. Training is identified as being in one of three categories: TEC, garrison, or field. Information is to be collected on all ammunition used for training (to be valued at current cost) and all vehicle mileage is to be recorded (to be valued at cost of fuel).

The necessary individual data is to be collected on the form at Appendix 4.

The collection of individual TEC usage data is to be accomplished using the form at Appendix 5.

The integrated information sheet at Appendix 6 was designed to provide the unit point-of-contact with a handy and concise reference that reflects all requirements associated with the data collection forms.

The table at Appendix 7 reflects the utilization of collected data in the effectiveness production function.

APPENDIX 1

Letter for Data Collectors

TO: All Data Collectors

SUBJECT: Data Collection for TEC CTEA.

BACKGROUND

The Army Research Institute (ARI) and Litton-Mellonics, under contract to ARI, are conducting Training Extension Course (TEC) Cost and Training Effectiveness Analyses (CTEA) research for the Army Training Support Center (ATSC). Last year's research effort focused on the cost and training effectiveness of TEC, where effectiveness was a function of individual performances on selected hands-on performance tests, and the relation of TEC usage to individual performances on their Skill Qualification Test (SQT). Performance, SQT, TEC usage, training, and personnel data were obtained from more than fifty (50) active Army battalions. Results showed TEC effective in training individuals and a positive relation between TEC usage and SQT scores.

This year's research effort also concerns the cost and training effectiveness of TEC, but where effectiveness will be a function of unit performances (squads/sections/crews) on selected portions of their ARTEP evaluations. TEC usage will also be related to individual soldiers performance on the SQT. Performance, SQT, TEC usage, training, and personnel data will be obtained.

DATA COLLECTION

As a designated point of contact (POC) for your unit you serve as a coordinator for data collection. This involves establishing the data collection organization within your unit, communicating with a senior coordinator and/or ARI/Mellonics to ask or answer questions, assembling and checking completed data forms and forwarding them. Of the five categories of data to be collected for the overall research, you will be concerned with only three-training data, personnel data, and TEC usage data. (Effectiveness data will be collected by the evaluators for your battalion ARTEP evaluation and SQT data will be obtained from ATSC). The accompanying package contains all of the necessary data collection materials, instructions and suggestions. The suggested procedures and the designs of the forms are such as to adequately provide the data required for the research with minimum impact on your unit. For instance, there are only four forms to be used by trainers and leaders to collect data for your Sections/Squads/Crews.

The importance of collecting the data as requested cannot be over-emphasized; the result of not collecting the data as requested would be detrimental to the value of the research. For example, consider that within a battalion, training data are collected for only some squads. Since effectiveness data are to be collected for a sample of sections/squads/crews selected for sub-unit evaluations at the time of the ARTEP there can be no assurance that the training data and effectiveness data relate to the same squads (as they must). This mismatch of data would render impossible analyses for the purposes of the research, and constitute a waste of resources in collecting the usable data. Collection of the required training data as requested, therefore, is crucial to the successful accomplishment of the CTA research.

DATA COLLECTION MATERIALS

Following is a list of the contents of the accompanying data collection package.

- o Data Collection Forms Integrated Information Sheet.
- o Form 1 (Section/Squad/Crew Training Data) for the collection of squad echelon training data.
- o Form 2 (Company/Battery Training Data) for the collection of training data above squad echelon.
- o Form 3 (Individual Data) for the collection of individual data.
- o TEC usage form to record individual and group use of TEC
- o Addressed enveloped in which to forward data to ARI/Mellonics.
- o ARI/Mellonics telephone numbers and addresses.

The data collection package was developed to be complete and easily understood in order to facilitate your data collection effort. However, if questions arise as you review the materials and you don't find satisfactory answers, please telephone ARI/Mellonics.

APPENDIX 2

Section/Squad/Crew

Training Data Form

Section/Squad/Crew Training Data

Box II

[illegible]

Box III

[illegible]

Instructions on Reverse

Box I

[illegible]

SECTION/SQUAD/CREW TRAINING DATA

- WHO-** This form should be filled in by the Section Chief, Squad Leader, Tank Commander or Crew Chief.
- WHAT-** This form must be completed for all training that your Section/Squad/Crew participates in.
- WHEN-** Fill out this form during training or as soon thereafter as possible. At the end of each training week this form will be collected and another form will be provided for the following week.

HOW

1. In the spaces provided in Box I do the following immediately:

- a. fill in the training week's beginning and ending dates to correspond with your unit's weekly training schedule;
- b. print your name in the blank labelled Squad Leader/Section Chief/Tank Commander/Crew Chief
- c. identify your unit down to your squad/section/crew;
- d. print the last names, paygrade and social security account numbers (SSAN) of all current members of your squad/section/crew (include yours) on the lines in the column labelled "Last name/Paygrade/SSAN."

2. In the spaces provided in Box II do the following during training or the earliest possible time after training occurs:

- a. Record the title (subject) of the training as it appears on the weekly training schedule. If the training did not appear on the weekly training schedule, use the title provided by the trainer. If you or some other member of your squad/section/crew were the trainer and the training was exclusively for your squad/section/crew title the training with a commonly used subject title.

- b. When TEC is being used, place a check in the section labelled TEC for the identified training in the adjacent subject box. Insure that all personnel complete the individual TEC Usage form.

- c. Directly beneath the training title (subject), print the date and time when training began.

3. In Box III, in the spaces immediately to the right of the squad/section/crew member names (Box I), and under the appropriate column of Box II, do the following:

- a. For training which is conducted by anyone not from your squad/section/crew, simply indicate with a check those squad/section/crew members who attended the training listed in the column of Box II.

- b. If you or some other member of your squad/section/crew conduct(s) the training for your squad/section/crew, in the appropriate space opposite your(his) name print the letter "T", record the length of the training (in hours), and in the appropriate spaces indicate with a check those who attended the training.

NEXT

For every instance of training received by one or more of your squad/section/crew members you must make an entry in Boxes II and III (Numbers 2 and 3 in the instructions) until the training week is finished or you have filled the form. If you fill the form before the end of the training week, obtain a new form and continue collecting data. Number the forms appropriately on the upper right hand corner on the front. At the end of the training week your form should be returned to the person from whom it was received.

APPENDIX 3

Company/Battery

Training Data Form

COMPANY/BATTERY TRAINING DATA

- WHO-** This form should be filled in by a company/battery trainer for all platoon and company echelon training and by the battalion trainer for all battalion echelon training.
- WHAT-** This form must be completed for all training of test elements which is not solely by and for a single section/squad/crew.
- WHEN-** This form should be filled in during or immediately following each period of instruction/training.

1. Record the trainer's company and Bn designation.

2. a. Provide the name and rank of the OIC or NCOIC for the period of instruction or field exercise.

b. For classroom type training, list the ranks of all training assistants (such as concurrent trainers, demonstrators) and enter the number of assistants for each rank.

Rank How Many

_____	_____
_____	_____
_____	_____
_____	_____

3. Identify the unit(s) attending the training. Provide the total number of enlisted men attending training.

4. Provide the actual training preparation time. These figures should include only the time expended to prepare for this period of instruction/training.

a. For the individual in either 2a or 2b, give the total hours of preparation.

Hours

b. List again the ranks in 2b and give the total number of hours of preparation by all training assistants for each rank.

Rank How Many
Hours?

_____	_____
_____	_____
_____	_____
_____	_____

5. Provide the date and actual time for the start and completion of training. For tactical field training the unit's time of departure from garrison and the time of return to garrison should be recorded. For administrative/classroom type training, provide the date and time for the start and completion of the training.

date _____
time _____
to
date _____
time _____

6. Provide the descriptive title for this training. If the title corresponds to the one in the weekly training schedule, use that title. If this training has been added after the weekly training schedule was published, if it is informal training, or if it is a substitute for scheduled training, use a standard descriptive title. If possible, include the ARTEP T&EO number(s) or task number(s).

7. Check either "mission" or "implied mission" depending on whether the training is directly related to the unit mission or indirectly (implied) related to the mission, but necessary to execute the mission.

mission _____
implied mission _____

8. Place a check in the space for "garrison" or "field" to identify where the training occurred. Garrison includes such areas as learning centers, motor pool and Bn classrooms. The field area will include local training areas and major training areas.

garrison _____
field _____

9. Place a checkmark in the appropriate blank if TEC was used to instruct or assist in the instruction.

TEC _____

No TEC _____

10. Estimate the percentage of the group receiving training who viewed the TEC instruction.

_____ %

11. Of the training time in question 5 how much of the training time was TEC time?

_____ Hours

AMMUNITION

12. If ammunition or pyrotechnics were used for this training indicate the type and amount expended, if none was used so indicate in the appropriate space. First, locate among the following list the type(s) of ammunition or pyrotechnics. All ammunition and pyrotechnics have been grouped by similarity of items or weapon when possible. For example, CTG Ball 5.56-MM, CTG TR 5.56-MM, and CTG BLANK 5.56-MM have been combined and appear as CTG 5.56-MM (all types). Next, in the space to the left of the selected type(s) provide the number of units used for such categories as cartridges, rounds, simulators and pounds as labelled. For ammunition or pyrotechnics which were used, but which do not appear in the following list, identify the type and indicate the amount expended. Place a checkmark in this blank if no ammunition or pyrotechnics were used. NONE _____

_____ CTG 7.62-MM (all types)
_____ CTG 5.56-MM (all types)
_____ CTG CAL .50 (all types)
_____ CTG CAL .45 (all types)
_____ SUBCALIBER TRAINING DEVICE
_____ (SCTD) AMMUNITION
_____ CTG 40-MM (all types)
_____ CTG 81-MM (all types)
_____ CTG 4.2 IN MORT (all types)
_____ CTG 90-MM GUN (all types)
_____ CTG 105-MM GUN (all types)
_____ CTG 152-MM GUN (all types)
_____ RD 155-MM AMMUNITION and
_____ FUSE (all types)
_____ RD 105-MM AMMUNITION and
_____ FUSE (all types)
_____ FLARES, SMOKE GRENADES,
_____ and SIGNALS (all types)
_____ (others) _____

_____ GRENADE, HAND FRAG/PRACTICE
_____ GRENADE, HAND RIOT CS
_____ ROCKET/MISSILE, PRACTICE
_____ (LAW, DRAGON, TOW)
_____ SIMULATOR, BLAST (TOW)
_____ SIMULATOR, PROJECTILE
_____ GROUND BURST
_____ SIMULATOR, ATOMIC EXPLOSION
_____ SMOKE POT
_____ FIRING DEVICE DML (all types)
_____ CHARGE DML (pounds)
_____ CAP, BLASTING (all types)
_____ FUZE, MINE COMBINATION
_____ GUIDED MISSILE, REDEYE
_____ LAW ROCKET, HEAT
_____ DRAGON MISSILE, HE OR INERT
_____ TOW MISSILE, HE OR INERT
_____ (others) _____
_____ (others) _____

13. If vehicles were used for training indicate the type and the total mileage. First locate among the following list the type of vehicle. Then indicate the total mileage for all vehicles of that type which were used for this training.

_____ CARRIER (all 113 type-M106, M125, M577, etc.)
_____ TANK (all types)
_____ HOWITZER SP 155-MM
_____ RECOVERY VEHICLE, M-578
_____ RECOVERY VEHICLE, M-88
_____ TRUCK AMBULANCE (all types)
_____ TRUCK, $\frac{1}{2}$ TON, (all types)
_____ TRUCK, $\frac{3}{4}$ TON (all types)
_____ TRUCK, 1 $\frac{1}{4}$ TON (all types)
_____ TRUCK, 2 $\frac{1}{4}$ TON (all types)
_____ TRUCK 5 TON (all types)
_____ TRUCK 8 TON (all types)
_____ TRUCK 10 TON (all types)

APPENDIX 4

Individual Data Form

Instructions on Reverse

INDIVIDUAL DATA

CO/Bty **Battalion**

Platoon

Sqd/Sec/Crew_____[illegible]

ARI

Name of person(s) completing form _____/_____

Form 3

INDIVIDUAL DATA

- WHO- Items 1 thru 4 of this form should be filled in by the company. The form should be completed by the Personnel Administration Center.
- WHAT - This form must be completed for all squads/sections/crews that receive an evaluation during the ARTEP. All squad/section/crew personnel present for any portion of the ARTEP should be included.
- WHEN- This form should be completed as early as possible after squads/sections/crews complete their subunit evaluations and no later than one week after the FTX portion of the formal ARTEP evaluation.
- HOW- Begin by filling in the following blanks on the reverse side: In the upper left hand corner provide the battalion, company, platoon, and squad/section/crew designation. At the bottom of the page, in the space provided, print the name of the person(s) completing the form.
- A. Identify the squads/sections/crews of your company that participated in selected subunit evaluations (list of selected evaluations to be provided) for the battalion ARTEP. In column 1 list the subunit members (last name, first name, middle initial), their pay grades (E-1, E-2, E-3...E-8, E-9) & their Social Security Account Numbers.
- B. In the second column indicate the position of each individual in his squad/section/crew by PRINTING in capital letters the accepted abbreviations for those positions, such as G=Gunner, TC=Tank commander or L=Loader.
- C. In columns 3 and 4, state the number of months (use rounding as necessary) that each individual has been assigned to the position indicated in column 2 and the months assigned to this squad/section/crew.
- D. In column 5, indicate each individual's Duty Military Occupational Specialty (DMOS) and Primary Military Occupational Specialty (PMOS). Use the standard five digit codes.

E. Columns 6 through 8 require that information be recorded in units of whole months.

F. For each individual determine the number of years of education completed and enter the information in column 9. For example, if the individual has completed the seventh grade and no more enter the number 7; if the soldier has completed one year of college and no more enter the number 13, and so on.

G. For each individual, enter his General and Technical Score (GT Score) in column 10.

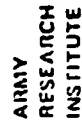
NOW- Check for complete and accurate data then return this form to the point of distribution.

Army Research Institute

Form 3

APPENDIX 5

TEC Individual Usage Form



TEC INDIVIDUAL USAGE FORM

PT-5141A

[illegible]

APPENDIX 6

Data Collection Forms

Integrated Information Sheet

DATA COLLECTION FORMS INTEGRATED INFORMATION

FORM	PURPOSE	FORM UTILIZATION	TARGET AUDIENCE	DISTRIBUTION TIME	COMPLETION TIME	RETURN TIME TO ARI/HELLONICS	NOTES
Form 1 Section/Squad/ Crew Training Data	To collect detailed individual data on all training received by Section/Squad/Crew members.	The Section Chief/Squad Leader/Tank Commander/Crew Chief will maintain this form.	All Section/Squad/Crew members.	The beginning of each training week.	The end of each training week.	NLT one week after completion.	
Form 2 Company/Battery Training Data	To collect data on all training above squad echelon. Includes use of TEC, ammo expenditure and vehicle use.	The trainer/instructor/OIC/NGOIC for all garrison or field training from platoon thru battalion echelon should complete this form.	All training attendees when training is conducted for more than one Section/Squad/Crew.	Immediately prior to each period of training	Immediately after training.	Weekly with corresponding Form 1.	
Form 3 Individual Data	To collect the individual data necessary to complete the Cost Training Effectiveness Analysis	To be completed by Company/Battery personnel and the Personnel Administration Center.	All individuals that participate in subunit evaluations.	Immediately after subunit evaluations.	NLT one week after ARTEP Evaluation.	NLT two weeks after the ARTEP Evaluation.	
TEC Usage Form	To record all individual use of TEC.	This form will be filled out by each individual for each TEC lesson that is viewed-to include viewing in a group.	All enlisted men using TEC.	Immediately prior to use.	Immediately prior to use.	Weekly with Form 1 and Form 2.	

APPENDIX 7

Data Form Utilization For Deriving Inputs to Effectiveness Production Function

DATA FORM UTILIZATION FOR DERIVING INPUTS
TO EFFECTIVENESS PRODUCTION FUNCTION

<u>Form Identification</u>	<u>PARAMETER</u>		
	<u>Hourly Cost of Garrison (γ)</u>	<u>Hourly Cost of TEC (τ)</u>	<u>Hourly Cost of Field Training (ϕ)</u>
TEC Usage Form	-	Selected Items	-
Form 1	All Items	All Items	All Items
Form 2	Items 2b, 3, 4, 5, 6, 7, 8	Items 3, 9, 10, 11	Items 2a, 3, 4, 5, 6, 7, 8
Form 3	All Items	All Items	All Items